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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding	86472855
Applicant	LG Electronics Inc.
Applied for Mark	QLED
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Serial No.:	86/472,855
Mark:	**QLED**
Applicant:	LG Electronics, Inc.
Filing Date:	December 5, 2014
Examining Attorney:	Q Queen Law Office 111

APPLICANT'S *EX PARTE* APPEAL BRIEF

TABLE OF AUTHORITIES

Cases

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I. INTRODUCTION

Appellant, LG Electronics, Inc., hereby appeals the Examining Attorney's refusal to register Applicant's QLED mark in Application Serial No. 86/472,855 ("the Application") on the ground that the mark is generic pursuant to Trademark Act § 23(c), 15 U.S.C. § 1091(c). For the reasons set forth herein, Applicant respectfully requests that the Board reverse the genericness refusal and allow Applicant's QLED mark to be registered on the Supplemental Register.

II. STATEMENT OF FACTS

On December 5, 2014, Applicant filed its application to register the mark QLED for use with:

> Mobile phones; Smart phones; Software for mobile phones; Laptop computers; Computers; Software for computers; Computer application software; Downloadable electronic publications; Tablet computers; Remote control apparatus; Wearable computers; Smart phones that fit on the user's face in the manner of eyeglasses; Wristbands adapted or shaped to contain or attach to handheld digital electronic media players; Computer software for wireless data communication for receiving, processing, transmitting and displaying information relating to fitness, body fat, body mass index; Personal portable devices for recording, organizing, transmitting, manipulating, reviewing and receiving text, data, images and audio files relating to health and wellness; Software for television; Television receivers; Monitors for computer; Apparatus for recording, transmission or reproduction of sound or images; Digital Versatile Disc (DVD) players; Touch panels; LED panels; Polarizing film for LED panel; LED display for television; Audio-Video receivers for home theaters; Computer monitors.

On January 6, 2015, the Examining Attorney issued a first Office Action refusing registration of Applicant's QLED mark under 15 U.S.C. § 1052(e)(1) as merely describing a feature or characteristic of Applicant's goods.

On June 23, 2015, Applicant filed a Response to the first Office Action. In its Response, Applicant perfected its Section 44(e) basis and amended the Application to seek registration of the QLED mark on the Supplemental Register.

On July 29, 2015, the Examining Attorney issued a second Office Action in which the

Examining Attorney refused to amend the application to the Supplemental Register and continued and maintained the Section 2(e)(1) merely descriptive refusal. The Examining Attorney added an additional refusal to registration under 15 U.S.C. § 1091(c) because the mark is allegedly generic. In support of the genericness refusal, the Examining Attorney relied on internet evidence and U.S. patents, including U.S. Patent Registration No. 8,363,307.

On November 30, 2015, Applicant submitted a response to the outstanding Office Action traversing the genericness refusal.

On January 25, 2016, the Application was suspended pending the outcome of prior pending Application Serial No. 86/384,290 for the mark QLED. The merely descriptive and genericness refusals were continued and maintained. The prior pending application was expressly abandoned on January 29, 2016, and a Notice of Abandonment was issued on February 1, 2016.

On August 23, 2016, the Examining Attorney issued a Final Action in which the merely descriptive and genericness refusals were made final.

On December 30, 2016, Applicant filed a Request for Reconsideration, which was denied on January 24, 2017. Applicant filed its Notice of Appeal on February 22, 2017.

III. ARGUMENT

The Examining Attorney's refusal to register Applicant's QLED mark on the ground of genericness should be reversed for at least two reasons. First, the Examining Attorney misidentified the genus of Applicant's goods, which is the critical first step in the genericness analysis. Second, the Examining Attorney did not provide clear and substantial evidence that the relevant public understands QLED to refer to Applicant's genus of goods.

Generic terms are terms that the relevant purchasing public understands primarily as the

common or class name for the goods or services. *In re Dial-A-Mattress Operating Corp.*, 240 F.3d 1341, 57 U.S.P.Q.2d (BNA) 1807, 1811 (Fed. Cir. 2001); *In re Am. Fertility Soc'y*, 188 F.3d 1341, 1346, 51 U.S.P.Q.2d (BNA) 1832, 1836 (Fed. Cir. 1999). The Examining Attorney bears the burden of making a "strong" showing, with "clear evidence," that the Applicant's proposed mark is generic. *In re Merrill Lynch, Pierce, Fenner & Smith Inc.*, 828 F.2d 1567, 4 U.S.P.Q.2d (BNA) 1141 (Fed. Cir. 1987). *See also In re K-T Zoe Furniture, Inc.*, 16 F.3d 390, 393, 29 U.S.P.Q.2d (BNA) 1787, 1788 (Fed. Cir. 1994). "[D]oubt on the issue of genericness is resolved in favor of the applicant." *In re DNI Holdings, Ltd.*, 77 U.S.P.Q.2d (BNA) 1435, 1437 (Trademark Trial & App. Bd. Dec. 6, 2005).

The two-part test used to determine whether a mark is generic is: (1) what is the genus of goods or services at issue? and (2) does the relevant public understand the designation primarily to refer to that genus of goods or services? *H. Marvin Ginn Corp. v. Int'l Ass'n of Fire Chiefs, Inc.*, 782 F.2d 987, 990, 228 U.S.P.Q. (BNA) 528, 530 (Fed. Cir. 1986). The test turns upon the primary significance that the term would have to the relevant public. *Id.* The relevant public for a genericness determination refers to the purchasing or consuming public for the identified goods and services. *Magic Wand Inc. v. RDB Inc.*, 940 F.2d 638, 641, 19 U.S.P.Q.2d (BNA) 1551, 1553 (Fed. Cir. 1991). The correct inquiry is whether the relevant public understands the term to be generic. *In re 1800Mattress.com IP LLC*, 586 F.3d 1359, 1364, 92 U.S.P.Q.2d (BNA) 1682, 1685 (Fed. Cir. 2009).

A. The Examining Attorney's Genericness Refusal Should Be Reversed Because the Examining Attorney Misidentified the Genus of Applicant's Goods.

Because the identification of goods or services in an application defines the scope of rights that will be accorded the owner of any resulting registration under Section 7(b) of the Trademark Act, generally "a proper genericness inquiry focuses on the description of services set

forth in the [application or] certificate of registration." *Magic Wand*, 940 F.2d at 640, 19 U.S.P.Q.2d (BNA) at 1552 *citing Octocom Sys., Inc. v. Houston Computer Servs., Inc.*, 918 F.2d 937, 942, 16 U.S.P.Q.2d (BNA) 1783, 1787 (Fed. Cir. 1990).

In the present case, the identification of goods is:

> Mobile phones; Smart phones; Software for mobile phones, namely, software for wireless content delivery; Laptop computers; Computers; Software for computers, namely, software for wireless content delivery; Computer application software, namely, software for wireless content delivery; Downloadable electronic publications in the nature of magazines in the field of information technology; Tablet computers; Remote control apparatus for televisions; Wearable computers; Smart phones that fit on the user's face in the manner of eyeglasses; Wristbands adapted or shaped to contain or attach to handheld digital electronic media players; Computer software for wireless data communication for receiving, processing, transmitting and displaying information relating to fitness, body fat, body mass index; Personal portable devices, namely, computers for recording, organizing, transmitting, manipulating, reviewing and receiving text, data, images and audio files relating to health and wellness; Software for television, namely, software for wireless content delivery; Television receivers; Monitors for computer; Apparatus for recording, transmission or reproduction of sound or images; Digital Versatile Disc (DVD) players; Touch panels; LED panels; LED display for television; Audio-Video receivers for home theaters; Computer monitors.

In the Office Action, the Examining Attorney sets forth the law correctly, i.e., "[r]egarding the first part of the inquiry, the genus of the goods and/or services is often defined by an applicant's identification of goods and/or services. *In re Meridian Rack & Pinion*, 114 USPQ2d at 1463 (citing *Magic Wand Inc. v. RDB Inc.*, 940 F.2d 638, 640, 19 USPQ2d 1551, 1552 (Fed. Cir. 1991))," but then goes on to misapply the law. The Examining Attorney identifies the genus of goods as "computer, display, smartphone, TV, electronic technology." *See* 8/23/2016 Office Action at p. 3. This depiction of the genus is problematic in two regards, one an error of exclusion and the other an error of over-inclusion.

Applicant's goods include additional goods beyond computers, displays, smartphones and TVs; they also include goods such as "software for mobile phones [and computers], namely,

software for wireless content delivery," "downloadable electronic publications . . . ," "remote control apparatus for televisions," and "Digital Versatile Disc (DVD) players," among others. These items have been excluded impermissibly from the genus of goods.

More importantly, especially in view of the references cited by the Examining Attorney in an attempt to establish the alleged understanding of the relevant public, "electronic technology," has been impermissibly included in the genus of goods. "Electronic technology" is nowhere in Applicant's identification of goods. In addition, no definition or understanding of "electronic technology" is provided by the Examining Attorney. Thus, references provided to show that the relevant public understands QLED to refer to "electronic technology" miss the point because the genus of goods is Applicant's identification of goods, which does not specifically include "electronic technology," and "electronic technology" is never given any meaning. As a result, the Examining Attorney has incorrectly identified Applicant's genus of goods, which results in an erroneous genericness refusal to register the QLED mark. This incorrect identification fatally infects the rest of the genericness analysis.

B. The Genericness Refusal Should Be Reversed because the Examining Attorney Provided Insufficient Evidence of the Relevant Public's Understanding of QLED.

It is beyond dispute that "the burden of showing that a proposed trademark is generic remains with the Patent and Trademark Office." *Merrill Lynch*, 828 F.2d at 1571, 4 U.S.P.Q.2d (BNA) at 1143. Moreover, it is incumbent upon the Examining Attorney to make a "***substantial showing*** that the matter is in fact generic." *Id.* (emphasis added). This substantial showing "must be based on clear evidence of generic use." *Id.* Thus, "a strong showing is required when the Office seeks to establish that a term is generic." *K-T Zoe Furniture, Inc.*, 16 F.3d at 393, 29 U.S.P.Q.2d (BNA) at 1788. Furthermore, any doubt whatsoever on the issue of genericness must

be resolved in favor of the Applicant. *In re Waverly Inc*., 27 U.S.P.Q.2d (BNA) 1620, 1624 (Trademark Trial & App. Bd. June 29, 1993).

The critical issue is to determine whether the record shows that members of the ***relevant public*** primarily use or understand the term sought to be registered to refer to the category or class of goods or services in question. *H. Marvin Ginn Corp*, 782 F.2d at 989, 228 U.S.P.Q. (BNA) at 530 (Fed. Cir. 1986) (emphasis added); *In re Women's Publishing Co. Inc*., 23 U.S.P.Q.2d (BNA) 1876, 1877 (Trademark Trial & App. Bd. June 25, 1992). Evidence of the public's understanding of a term may be obtained from any competent source, including testimony, surveys, dictionaries, trade journals, newspapers and other publications. *Merrill Lynch*, 828 F.2d at 1571, 4 U.S.P.Q.2d (BNA) at 1143; *In re Northland Aluminum Products, Inc.*, 777 F.2d 1556, 1559, 227 U.S.P.Q. (BNA) 961, 963 (Fed. Cir. 1985).

The references cited in the August 23, 2016 Office Action, however, are not probative of relevant consumers' understanding of QLED in connection with Applicant's goods. The first publication is a Softpedia article, which was published August 17, 2016, that discusses rumors about a Nokia-branded Android smartphone which "***could come*** with 5.2- and 5.5-inch QHD QLED displays and pack Qualcomm's Snapdragon 820 processor." *See* Exhibit to 8/23/2016 Office Action. The actual launch of the phones "***could happen*** in early 2017." *Id.* In this article, which is a forward-looking industry article reporting "rumors" about goods that may be launched in the future, QLED is being used descriptively to describe a type of display; it is not being used as the name of the display. *Id.* Further, the article does not reflect the understanding of the relevant consuming public because it is an industry publication discussing rumors about goods that have not even been released as of the time of the article.

In the second reference from http://coloriq.com/about-us/about-qd-vision/, QLED is

being used as a trademark and the "TM" superscript is added to the term. *See* Exhibit to 8/23/2016 Office Action. This usage weighs heavily against a conclusion that QLED is generic.

The OpenPR publication is a press release with forward-looking industry projections as far out as 2019. *See* Exhibit to 8/23/2016 Office Action. It is believed that "[q]uantum dots will cascade into the marketplace." Again, this is not probative of relevant public's understanding of QLED.

Lastly, according to the final publication, "the Samsung Advanced Institute of Technology team has showcased the world's first QLED TV." The article goes on: "Now what is that you may ask? Well it's Quantum Dot Dull Colour Display, which is supposed to be a whole lot brighter than regular OLED displays." This is hardly an explication of the relevant consuming public's understanding of QLED. In fact, consumers apparently have no understanding of QLED, thus the need for an explanation by the author of the article.

The January 24, 2017 Denial of the Applicant's Request for Reconsideration (hereinafter, "Denial") also cited evidence that was not sufficient to meet the high standard of a substantial showing that QLED is generic. Simply including citations to websites that may use the wording QLED without any review of the understanding of how the term is being used or how it would be understood by the relevant customer does not provide a substantial showing. In addition, as further described in the next section, a single, generic understanding of the term QLED does not exist. The record does not include a substantial showing that QLED is generic.

The Examining Attorney alleges that the evidence attached to the Denial shows that Samsung currently offers QLED TVs. 1/24/2017 Denial at p. 2. However, evidence cited by the Examining Attorney actually demonstrates the opposite to be true, Samsung is not selling QLED TVs as that term is commonly understood. For example, an article by OLED-info.com cited in

the 7/31/2015 Office Action states, "Samsung is already producing LCD TV's enhanced with quantum-dots films that enhance the color gamut - **but these aren't QLED TVs."** *See* Exhibit to 7/31/2015 Office Action (emphasis added) (https://www.oled-info.com/samsung-reportedly-aims-commercialize-qled-tvs-2020, last visited 4/21/2017). "QLED is similar to an OLED - an emissive display that uses the QDs as light emitting materials." *Id.* As further noted in the article by ledinside cited in the Denial, "Samsung's QLED TVs require the separation of backlight to illuminate pixels … Yet, QLED TVs do not require backlight since the dots emit their own light." *See* Exhibit[1] to Denial. This distinction is important because it demonstrates the currently sold Samsung TVs are not actually QLED TVs.

An October 25, 2016 blog post on IHS Markit, also cited in the Denial, further explains the differences between currently sold TVs, such as those sold by Samsung, and actual QLED TVs. *Id.* (http://blog.ihs.com/qled, last visited 4/21/2017). It specifically notes, "there are still many technical problems to creating self-emitting QLED displays." *Id.* It explains two development steps are needed to produce QLED TVs. *Id.* The first step is to incorporate quantum dot materials into the LCD panel, but this step does not create a self-emitting structure. *Id.* The second step is to replace organic light-emitting materials with QD materials in the existing OLED structure to create a self-emitting display. *Id.*

The Denial also cites an internet source where the term QLed is used as a product source for software goods with a narrow function, and the term's usage does not support the Examining Attorney's alleged generic understanding. *See* Exhibit to Denial (http://qfin.net/?page_id=2491, last visited 4/21/2017). For example, the website states, "QLed is the only software that includes a mathematical optimization module for your designs at no extra cost and the reporting system

[1] http://www.ledinside.com/news/2016/6/samsung_prepares_for_launch_of_bendable_oled_smartphones_and_qled_tvs, last visited 4/21/2017

provides the user with a detailed report on the thermal performance of the LED and all other components in the model." *Id.* It does not use the term QLed in a generic way. The last cited webpage in the Denial is also referring to the QLed software, when the page is read in full context. *Id.* (http://www.ecolitetechnologies.co.in/in-house-design, last visited 4/21/2017). It specifically states its products are "supported by industry standard software like Solidedge, Dialux, QLED and Altium." *Id.* The webpage is not referring to a generic understanding of QLED to allegedly identify certain types of TVs, monitors, and other electronic goods, as claimed by the Examining Attorney. *Id.*

Applicant respectfully submits that the Examining Attorney has not shown by clear and substantial evidence that Applicant's QLED mark is understood by the relevant public - consumers seeking to purchase Applicant's above-identified goods – as referring to those goods. *See Frito-Lay North America, Inc. v. Princeton Vanguard, LLC*, 109 U.S.P.Q.2d (BNA) 1949, 1952 (Trademark Trial & App. Bd. Feb. 28, 2014) (Identifying the relevant public for the identified goods of pretzel crackers as "ordinary consumers who purchase and eat pretzel crackers"). While some evidence relating to quantum dot technology has been introduced into the record, the record is devoid of probative evidence that the relevant consuming public understands QLED to refer to Applicant's goods. At the very least, there is doubt as to the genericness of Applicant's QLED mark, which must be resolved in Applicant's favor.

C. There is No Consensus Regarding the Meaning or Understanding of the Wording QLED

In addition to the lack of evidence for a substantial showing, other evidence demonstrates that there is not a single, common understanding in the public regarding the meaning of QLED, and that term is not a designation for a key aspect for a designation of the goods. As noted in the evidence relied on by the Examining Attorney:

> A typical QLED consists of three layers: one inner layer of quantum dots, one outer layer that transports electrons, and one outer layer that transports holes. When an electric field is applied to the outer layers, the electrons and holes move into the quantum dot layer, where they are captured by quantum dots and recombine. The recombination of one electron and one hole inside a quantum dot results in the emission of one photon.

See Exhibit to 7/31/2015 Office Action (https://phys.org/news/2013-05-quantum-dot-approaches-theoretical-maximum.html, last visited 4/21/2017). Thus, typical quantum-dot technology uses an electrical field and the quantum dot layer itself provides the light source. *Id.* As noted in another internet source, which was also cited by the Examining Attorney, the current technology available for sale to consumers is not quantum dot, and "is a different technology to quantum dot" because "in a TV that uses quantum dots a blue LED is used as a backlight source - more than one actually." *Id.* (http://www.techradar.com/news/television/the-future-of-tvs-may-not-be-oled-after-all-but-something-quite-different-1296520, last visited 4/21/2017). Consumers of QLED products would not be able to successfully determine on their own whether the product contains true quantum dot technology that relies on an electrical field or a different type of technology that uses a blue LED to backlight quantum dots. The term QLED does not have a generic meaning to consumers.

Additional support confirms that quantum dot technology can be understood to refer to technology where the quantum dot emits its own light due to an electrical field instead of being backlit by an LED. One internet publication described quantum dot technology as follows: "A 'proper' quantum light-emitting diode element emits its own light – the clue is in the name…" *See* Exhibit 1 (http://www.techradar.com/news/samsung-qled-samsungs-latest-television-acronym-explained, last visited 4/21/2017).

However, as explained above, Samsung is currently using QLED to describe its TVs that include a layer of quantum dots on top of an LED panel. Thus, there is no single, specific, key

designation for the term QLED. It is not possible that the term could be generic and that relevant public would primarily use or understand the term to refer to the category or class of goods or services in question. Especially when considering, as noted in evidence cited by the Examining Attorney, that quantum dot LED commercial focus covers a broad range of categories and classes of goods, including optical component lasers[2], light sources, light filters or converters, digital cameras, solar cells, image sensors, and others. *See*, *e.g.*, Exhibit 2 (http://www.acutemarketreports.com/report/quantumdotandquantumdotdisplaymarket, last visited 4/21/2017).

The differences in the use and understanding of the wording QLED further support the lack of genericness of the term. QLED is not a generic term that "is the common descriptive name of a class of goods or services." *H. Marvin Ginn Corp.*, 782 F.2d at 989, 228 U.S.P.Q. (BNA) at 530. "The critical issue in genericness cases is whether members of the relevant public primarily use or understand the term sought to be protected to refer to the genus of goods or services in question." *Id.* at 989-90, 228 U.S.P.Q. (BNA) at 530. There is no common primary use or understanding of the term.

[2] 8/23/2016 Office Action (http://www.openpr.com/news/352374/Quantum-Dot-and-Quantum-Dot-Display-QLED-Market-2019-Size-Share-Trend-Growth-Analysis-and-Forecast-Acute-Market-Reports.html, last visited 4/21/2017).

IV. CONCLUSION

For the reasons set forth above, the refusal to register Applicant's mark should be reversed.

April 24, 2017

Respectfully submitted,

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EXHIBIT 1

Samsung QLED: Samsung's latest television acronym explained

By Jamie Carter February 24, 2017 Television

QLED: a genuine step forward in TVs, or another marketing acronym?

Spring 2017 will see Samsung launch its new so-called QLED TV series – the Q9, Q8, and Q7 Series – which are armed with metal quantum dots, better viewing angles and deeper black levels. They claim to be the only TVs that can show 100% colour volume and are up to twice as bright as Samsung's 2016 SUHD TVs with a peak brightness of 1,500 to 2,000 nits.

But it seems like every year, TV manufacturers make the claim that last year's TVs were generally OK, but this year's TVs are the best thing ever made. It's confusing at times, and downright disheartening, too.

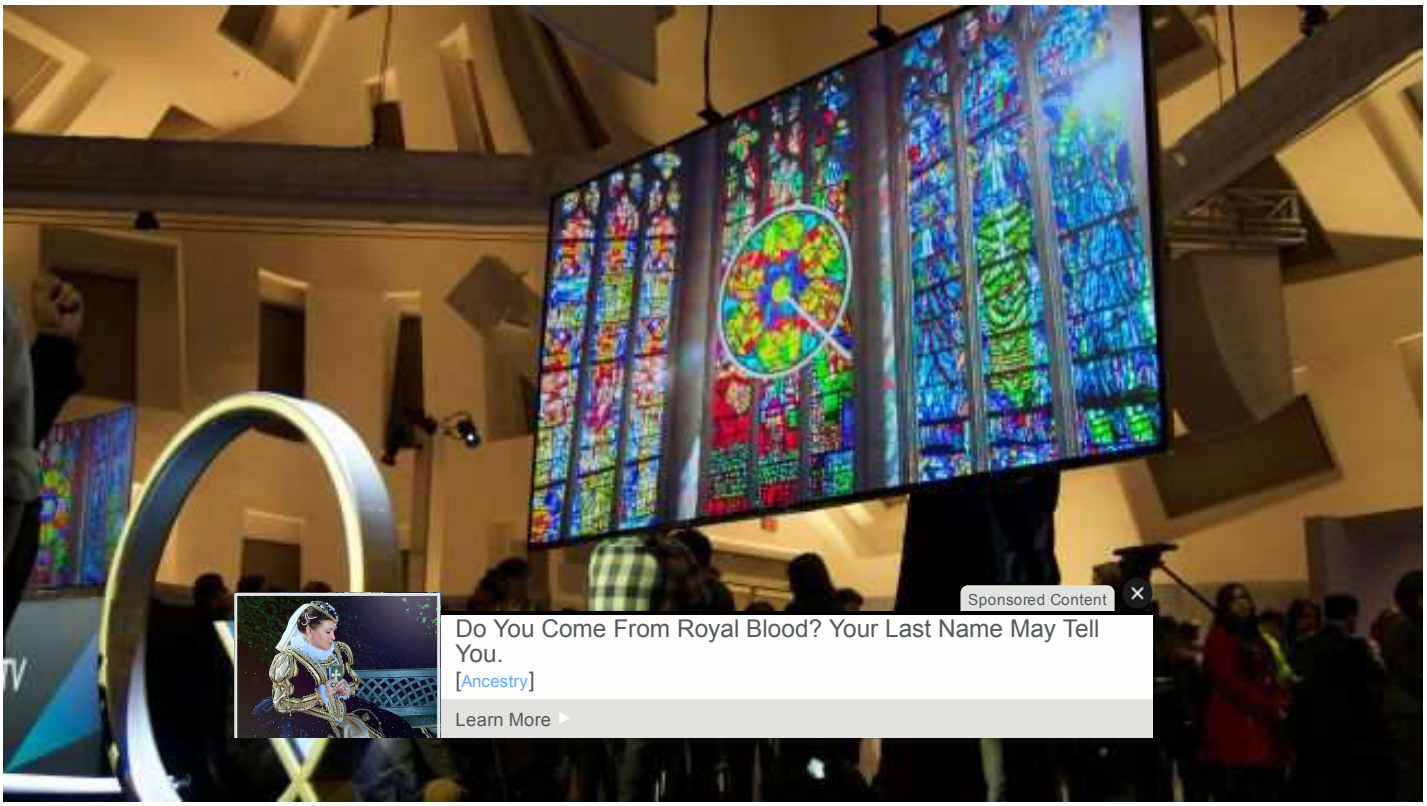
Here's what we want to know: Is this a 'major paradigm shift in the visual display industry', as claimed by Samsung's President of the Visual Display Business, HyunSuk Kim, or just Samsung's attempt to wrest back some momentum since Sony embraced OLED TVs?

With all other major TV brands going to OLED in 2017, can Samsung stand alone in breathing new life into ageing LCD TV tech? And, moreover, what if, anything, does QLED even mean? Let's explore the TV technology together.

What is QLED?

It's a bit of an enigma, to put it lightly. Literally QLED means – or we suppose it means – quantum dot light-emitting diode (QLED, not to be confused with OLED TVs), but this Samsung-baked concept is basically just the latest set of enhancements to the same quantum dot technology that the company has been working on for the past few years.

Technically speaking, Samsung's QLED TVs are not QLED at all, well, at least in the way that we understand the term. A 'proper' quantum light-emitting diode element emits its own light – the clue is in the name – whereas Samsung's latest TVs use a separate LCD backlight (and an edge-lit backlight, at that) just like any other LED-LCD TV. So where the QLED moniker comes from, we're not sure.



How does a QLED TV work?

It's complicated, but hang in there with us. So, to start, all QLED TVs have a quantum dot filter. This year, there's a new refined aluminium compound that help make the dots more efficient (and therefore brighter) and more effective at passing pass light through, which creates wider and more accurate colour.

So what is a quantum dot filter exactly? It's a film of tiny crystal semi-conductor particles that can be precisely controlled for their colour output, which replace the red, green and blue colour filters that old TVs used.

Samsung says that its QLED TVs use the new filters to display 100% coverage of the DCI/P3 color space (read: much deeper black levels and sparkling HDR), and maintain that performance whatever the brightness.

They're so bright, in fact, that Samsung's QLED TVs can manage anywhere between 1500 nits to 2000 nits brightness. Considering 1000 nits is needed to produce HDR, that's proper bright, though exactly how anyone could stand the glare of 2000 nits, we're not sure. Sunglasses, anyone?

While the advances in brightness are intriguing, Samsung claims that the new QLED TVs have a newly designed pixel panel structure to allow better off-axis viewing. For a living room environment, that could be QLED's big selling point.

Vials containing quantum dots before they get put into a TV. © Jamie Carter

QLED vs LED

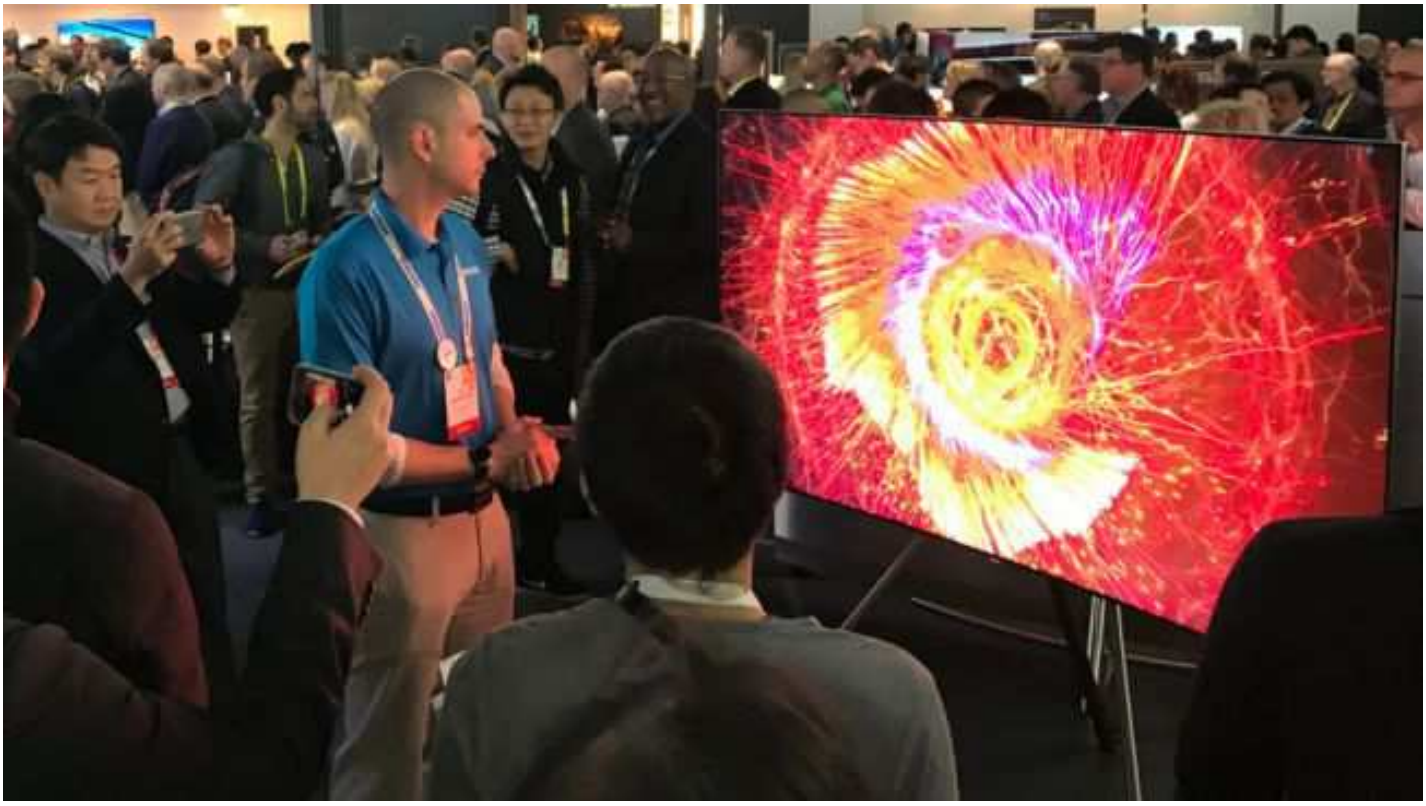
Beyond the 'paradigm shift' hyperbole of Samsung's marketing, it's really important to understand that QLED isn't really anything new at all. In fact, it's really nothing more than the latest – possibly among the last technically possible – tweaks to existing LED-LCD technology that's dominated bigscreen TVs for the last decade.

QLED's innovations – deeper blacks, better colours and wider viewing angles – tackle three traditional problems of LED and LCD technology, but they're the same problems that are addressed year in, year out by TV makers. Only upcoming reviews will reveal if, in fact, QLED is a significant step forward from traditional LED-LCD screens – but chances are good that we'll see some real improvements in these areas with Samsung's new sets.

QLED vs OLED

Perhaps a more important comparison is QLED vs OLED. The latter uses pixels that emit their own light, but OLED displays are manufactured only by Samsung's arch-rival LG, and now used by Sony, Philips and Panasonic, too.

There's no doubt that QLED, for now, has an advantage in terms of brightness (so in theory may better handle HDR content – though might just as easily overcook it), but if you're looking for a 'paradigm shift' in picture quality and the next-gen display technology, OLED is still the frontrunner. The latter uses individually lit pixels to achieve better contrast ratio and richer blacks that LED-LCD will never be able to hit, quantum dot filter or no.



At over 1500 nits. Samsung's QLED TVs are ultra-bright. © Jamie Carter

What happened to SUHD?

QLED and SUHD are essentially the same thing; the new messaging is more about marketing than technology, although the jump from 1000 nits on the top-end SUHD TVs to 1,500 to 2,000 nits on the flagship QLED TVs is perhaps more revolutionary than it seems at first. Put simply, for a buying public still getting to grips with what UHD is, SUHD just proved too confusing, so Samsung has dropped it. (It also probably didn't help that the 'S' in SUHD didn't really mean anything ... although we're not convinced that QLED is much clearer.)

Samsung's QLED TV line-up for 2017

There are three QLED Series for 2017 – surprisingly all edge-lit local dimming LED, not full array LED – the flagship Q9, Q8 and Q7.

Details are scant so far, but we do know that the Q9 comes in a 65-inch size with a flat screen, which is rather odd considering Samsung's flagship TVs have typically been curved for the past few years.

The Q8 Series, meanwhile, was shown-off at the CES 2017 in 55, 65 and 75-inch sizes, all with curved screens and edge-lit local dimming backlights.

Both the Q9 and Q8 models will also have an 'invisible connection' cable that links the display to a hub that stores the HDMI slots. A bigger contribution to the 'clutter-free' concept behind the QLED TVs' design are the easel-style Studio Stand and small swivel-base Gravity Stand.

Samsung's QLED TVs come with a swivel 'Studio' stand.

Should I buy a QLED TV?

Samsung's QLED TVs are claimed to be all about the brightest possible, most accurate coloured images pictures, which therefore work with all kinds of content in all kinds of lighting conditions. Although we can't yet confirm Samsung's claims that its QLED TVs are the brightest and best around – our upcoming reviews will confirm or deny that – they do appear to be as much about design and flexibility of installation as about picture quality.

That all seems a decent package for the living room, but whether you should buy a QLED TV will ultimately come down to price. And here comes the crux of the matter; will QLED TVs be cheaper than OLED TVs? They may need to be to stand a chance, but is Samsung really going to make itself a cut-price brand? We seriously doubt it. Expect oodles of marketing that make QLED seem a better option than OLED, though whether it is or not, only time will tell.

- These are the best 4K TVs in the world today

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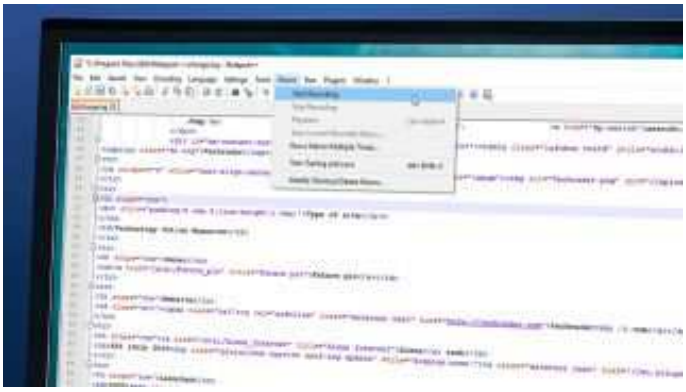

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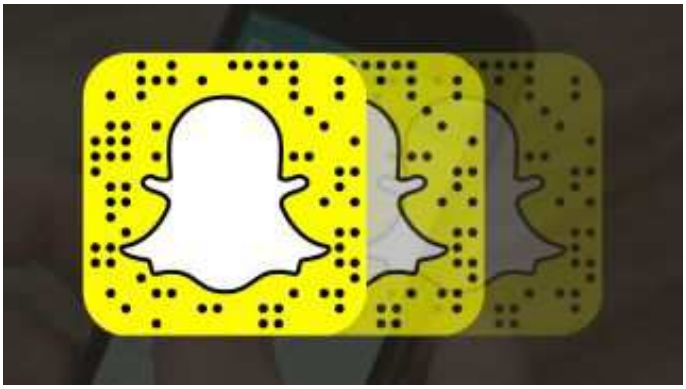

McDonald's is now taking job applications through Snapchat

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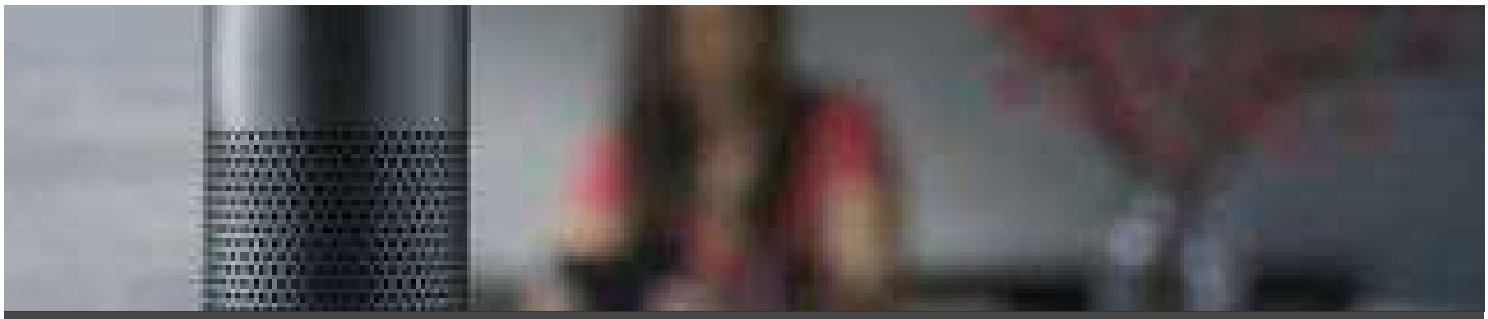

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EXHIBIT 2

Quantum Dot and Quantum Dot Display (QLED) Market, Shares, Strategies and Forecasts, Worldwide, Nanotechnology, 2013 to 2019

Published: Mar 2013 | No Of Pages: 221 | Published By: Winter Green Research

REPORT SUMMARY | TABLE OF CONTENT | REQUEST SAMPLE

WinterGreen Research announces that it has published a new study Quantum Dot and Quantum Dot Display (QLED) Market, Shares, Strategies and Forecasts, Worldwide, Nanotechnology, 2013 to 2019. The 2013 study has 221 pages, 80 tables and figures. Quantum dots will cascade into the marketplace. They offer lower cost, longer life, and brighter lighting.

According to Susan Eustis, "The commercialization of quantum dots using kilogram quantity mass production is a game-changer. High quality, high quantity and lowest price quantum dots increase product quality in every industry. The rate of change means speeded products cycles are evolving."

Once manufacturers learn to integrate higher efficiency luminescent quantum dots into their products, each vendor will need to follow or dramatically lose market share. This level of change brought by quantum dot and quantum dot displays (QLED) represents a new paradigm that will create new industries, products and jobs in science and industry. The list of possible quantum dot applications is ever expanding. New applications are waiting for the availability of more evolved quantum dots.

Quantum Dot LED (QLED) commercial focus has remained on key optical applications: Optical component lasers are emerging as a significant market. LED backlighting for LCD displays, LED general lighting, and solar power quantum dots are beginning to reach the market. Vendors continue to evaluate other applications.

Quantum dots QDs are minute particles or nano-particles in the range of 2 nm to 10 nm diameter. Quantum dots are tiny bits of semiconductor crystals with optical properties that are determined by their material composition. Their size is small to the nanoparticle level. They are made through a synthesis process. QD Vision synthesizes these materials in solution, and formulates them into inks and films. Quantum Dot LEDs (QLED) enable performance and cost benefits.

The quantum dot cannot be seen with the naked eye, because it is an extremely tiny semiconductor nanocrystal. The nanocrystal is a particle having a particle size of less than 10 nanometers. QDs have great potential as light-emitting materials for next-generation displays with highly saturated colors because of high quantum efficiency, sharp spectral resolution, and easy wavelength tenability. Because QDs convert light to current, QDs have uses in other applications, including solar cells, photo detectors, and image sensors.

QLED displays are anticipated to be more efficient than LCDs and OLEDs. They are cheaper to make. Samsung estimates that they cost less than half of what it costs to make LCDs or OLED panels. QLED quantum dot display is better than OLED. It is brighter, cheaper, and saves more energy. Energy-savings is a strong feature. Its power consumption is 1/5 to 1/10 of the LCD's Samsung offers now. Manufacturing costs of a display are less than half of OLED or LCD. It has a significantly longer life than the OLED.

QLED quantum dot display uses active matrix to control the opening and closing of the pixels of each color. Quantum dots have to use a thin film transistor. Emission from quantum dots is due to light or electrical stimulation. The quantum dots are able to produce different colors depending on the quantum shape and size used in the production of materials.

Dow Electronic Materials, a business unit of The Dow Chemical Company (NYSE: DOW) and Nanoco Group plc (AIM: NANO) have a global licensing agreement for Nanoco's cadmium-free quantum dot technology. Under the terms of the agreement, Dow Electronic Materials will have exclusive worldwide rights for the sale, marketing and manufacture of Nanoco's cadmium-free quantum dots for use in electronic displays.

HQuantum Dot and Quantum Dot Display (QLED) markets at $150.1 million in 2012 are anticipated to reach $6.4 billion by 2019 as technology matures and is designed into products.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, electronics.ca, Bloomberg, and Thompson Financial.